

**Before the**  
**FEDERAL COMMUNICATIONS COMMISSION**  
**Washington, D.C. 20554**

In the Matter of

Schools and Libraries Universal Service  
Support Mechanism

A National Broadband Plan for Our Future

CC Docket No. 02-6 and GN Docket No. 09-51

**COMMENTS OF INTEL CORPORATION**



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## **EXECUTIVE SUMMARY**

As the world leader in silicon innovation, Intel is committed to supporting public policies that promote ubiquitous, affordable, and high-quality broadband around the world. We believe that modern education demands that school-age children have broadband access at home. As a testament to our commitment to education, the Intel Teach Program has helped more than seven million K-12 classroom teachers incorporate technology into their lessons and foster digital literacy among their students. Under the Intel World Ahead Program, we have spent years working to accelerate PC ownership and enable an incremental one billion people to access the Internet by 2012. Our commitments to education and promoting universal broadband grant us unique insight into the Federal Communications Commission (FCC) E-Rate Notice of Proposed Rulemaking (NPRM).

Intel recognizes that as technology becomes a greater part of our everyday lives, the digital divide increasingly disadvantages low-income students. Students from low-income families are one-sixth as likely to have broadband access as children from households with annual incomes over \$75,000. Yet Internet access is becoming more and more integral to modern education, as a majority of students access the Internet to complete homework assignments. And studies show that students who have home Internet access earn higher grades than their peers. Thus, students who do not have Internet access at home will be further disadvantaged as the relevance of technology increases in the digital world.

To successfully bridge the digital divide, both broadband deployment and broadband adoption must be addressed. However, extending the reach of the E-Rate program to achieve these objectives risks reducing the already limited funding directed toward improving



broadband penetration among low-income schools and libraries. We therefore recommend that the FCC expend Lifeline funds to provide reimbursed home broadband Internet subscriptions to low-income students who qualify for Lifeline telephone services. The FCC should provide such reimbursement by implementing a three-year pilot program of Lifeline-qualifying sixth through eighth grade students. We believe that these proposals avoid increasing the financial burden on the already over-subscribed E-Rate program, and allow the FCC to improve broadband adoption among low-income students.



## **COMMENTS OF INTEL CORPORATION**

Intel Corporation (Intel) hereby submits comments to the Federal Communications Commission (FCC) pursuant to the Commission's Notice of Proposed Rulemaking (NPRM) in the above-captioned proceeding.<sup>1</sup> Intel—the world leader in silicon innovation—develops technologies, products, and initiatives to continually advance how we work and live.<sup>2</sup> Intel is dedicated to supporting public policies that promote ubiquitous, affordable, high-quality broadband in the United States and around the world. We respectfully submit our policy and technical expertise herein as the FCC proposes to extend E-Rate funds to support wireless Internet access on portable learning devices.<sup>3</sup>

### **I. INTEL'S COMMITMENTS TO PROMOTING EDUCATION AND FOSTERING UNIVERSAL BROADBAND ARE CONSISTENT WITH THE BASIC PURPOSES OF THE E-RATE NPRM**

Intel believes that broadband access is crucial for students to not only thrive in a high-technology world, but also to subsist. We believe that Internet connectivity is critical to success in a digital society and that wireless broadband PC access is essential for meaningful participation in the global economy. Intel is committed to furthering the educational growth of school-age children by providing these children with the skills they need for future achievement. Intel has developed several initiatives to arm children with such skills. These education initiatives reflect our commitment to fostering the educational development of tomorrow's leaders.

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<sup>1</sup> *In the Matter of Schools and Libraries Universal Service Support Mechanism, A National Broadband Plan for Our Future*, 75 Fed. Reg. 32,699 (proposed May 20, 2010).

<sup>2</sup> Additional information about Intel is available at [www.intel.com/pressroom](http://www.intel.com/pressroom).

<sup>3</sup> *In the Matter of Schools and Libraries Universal Service Support Mechanism, A National Broadband Plan for Our Future*, 75 Fed. Reg. 32,699, at para. 45 (proposed May 20, 2010).



**a. The Intel Teach Program Highlights Intel's Commitment to Equipping Tomorrow's Innovators with the Requisite Tools to Succeed in the Digital World**

Intel recognizes the important role education plays in fostering the development of our future leaders. In fact,

Intel believes that young people are the key to solving global challenges, and a solid math and science foundation coupled with skills such as critical thinking, collaboration, and digital literacy are crucial for their success. That is why we get directly involved in education programs, advocacy, and technology access to enable tomorrow's innovators.<sup>4</sup>

The Intel Teach Program is one example of our commitment to providing today's children with the education they need for tomorrow.<sup>5</sup> The Intel Teach Program is a research-based professional development program supporting K-12 classroom teachers as they incorporate technology into their lessons. Intel Teach instructs teachers how to design their curricula to foster digital literacy, higher-order thinking, and other critical 21st Century skills among their students. The Program has already served more than seven million teachers around the world, including over 350,000 teachers at home in the United States.<sup>6</sup> Our experience and success with the Intel Teach Program underscore the value of promoting digital literacy around the globe.

**b. Intel's Experience in Fostering Universal Broadband and PC Ownership Provides Unique Insight into the Benefits and Challenges of Improving Broadband Penetration**

Intel strives to bridge the digital divide in the U.S. and around the world by enabling an incremental one billion people to access the Internet by 2012. Intel's World Ahead Program focuses on connecting the next one billion people to uncompromised technology, by

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<sup>4</sup> Intel Education Initiative, available at [www.intel.com/education/index.htm](http://www.intel.com/education/index.htm).

<sup>5</sup> For more information on the Intel Teach Program, see [www.intel.com/education/teach/](http://www.intel.com/education/teach/).

<sup>6</sup> Inspiring the Next Generation of Innovators, 2009, available at [http://download.intel.com/education/teach/Intel\\_Teach\\_broUSv10b.pdf](http://download.intel.com/education/teach/Intel_Teach_broUSv10b.pdf).



accelerating PC ownership and enabling Internet access for remote and underserved communities around the world. We work with governments and other organizations in remote and underserved communities to make PCs more accessible and affordable through more than 200 innovative PC purchase programs in 60 countries. Intel has already supplied 78,000 PCs in over 40 countries for education. We work with governments, development organizations, community groups, and other technology leaders around the world to connect more people to the Internet using cost-effective, robust WiMAX solutions, in addition to other communications technologies.

Our experience with the Intel World Ahead Program shapes our optimistic view of U.S. broadband initiatives. Like the Obama administration and Congress, Intel wholeheartedly believes that ensuring sustainable deployment and adoption of cutting-edge broadband technologies by all Americans is essential to bridging the digital divide in our country and enabling the U.S. to be globally competitive in the long-term. Accordingly, Intel supports the important role that FCC's E-Rate Broadband NPRM will play in helping America achieve these goals, and we appreciate the opportunity to provide our unique perspective as the FCC undertakes rulemaking proceedings.

## **II. THE DIGITAL DIVIDE INCREASINGLY DISADVANTAGES LOW-INCOME STUDENTS IN A DIGITAL WORLD**

Broadband penetration initiatives should address both broadband deployment and broadband adoption in order to ensure that the FCC meaningfully invests in underserved communities. Our experience with Intel's World Ahead program has emphasized that broadband adoption remains a critical barrier to solving the digital divide. Improving broadband deployment and adoption among school-age children is needed to close the digital divide and



to arm children with the knowledge and tools they need to succeed in our increasingly digital world.

**a. Low Rates of Broadband Penetration Among Low-Income Students Make the School-Age Population an Important Demographic to Target**

Although fixed broadband reaches 92% to 94% of U.S. households, only 65% of households subscribe to broadband services.<sup>7</sup> Research examining the disparity between broadband deployment and broadband adoption in the U.S. identifies three primary factors explaining why individuals opt not to subscribe to broadband: (1) affordability; (2) usability; and (3) lack of relevance or perceived value.<sup>8</sup> As a result of these three factors,

[M]illions of children do not have a computer at home or the broadband connection they need to be productive members of a society that relies on the use of technology. Some families cannot afford broadband even if it is available.<sup>9</sup>

To this end, initiatives targeting school-age children may potentially reach as many as 18 million U.S. families that earn less than \$60,000 per year and have children under 18 years old.<sup>10</sup> Policies directed toward school-age children thereby present the opportunity to substantially improve broadband penetration among a relatively large sector of the U.S. population, and accordingly improve overall domestic broadband penetration.

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<sup>7</sup> Robert D. Atkinson, *Policies to Increase Broadband Adoption at Home*, The Information Technology & Innovation Foundation, at 1 (Nov. 2009).

<sup>8</sup> *Id.*

<sup>9</sup> April KirkHart, Jessica Rothschuh & Jenny Kattlove, *Information Technology Making a Difference in Children's Lives*, The Children's Partnership, at 9 (Apr. 2008), available at <http://www.childrenspartnership.org/AM/Template.cfm?Section=Reports1&Template=/CM/ContentDisplay.cfm&ContentID=11860>.

<sup>10</sup> S. Derek Turner, *Down Payment on Our Digital Future: Stimulus Policies for the 21<sup>st</sup>-Century Economy*, Free Press, at 26 (Dec. 2008).



Programs geared toward improving broadband penetration among school-age children may also stimulate greater broadband penetration among other sectors of the population. Research shows that stimulating broadband adoption among school-age children may encourage others to subscribe to broadband. For instance, one study found that,

Spurring broadband deployment and computer adoption among families with children can play a key catalytic role of not only helping other direct family members to become computer and Internet literate, but also their extended family and neighbors. Indeed, there is evidence that when households subscribe to the Internet, their neighbors are more likely to subscribe.<sup>11</sup>

School-age children, therefore, are an attractive demographic to target to improve broadband adoption, as such efforts may increase broadband penetration among school-age children and among their families and neighbors.

Broadband initiatives providing school-age children with home broadband access may also mitigate the effects of racial, ethnic, and income disparities. Studies show that home Internet access among children 7 to 17 varies by race, ethnicity, and income. While 80% of whites and 75% of Asian Americans 7 to 17 have home Internet access, only 44% of Hispanics, 43% of African Americans, and 41% of American Indians 7 to 17 have home Internet access.<sup>12</sup> And compared to children from households with annual incomes over \$75,000, children from low-income families are one-half as likely to have a computer, one-third as likely to have

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<sup>11</sup> Robert D. Atkinson, *Policies to Increase Broadband Adoption at Home*, The Information Technology & Innovation Foundation, at 5 (Nov. 2009) (citing Austan Goolsbee and Peter Klenow, *Evidence on Learning and Network Externalities in the Diffusion of Home Computers*, J.L. & Econ., Oct. 2002, 317-344).

<sup>12</sup> April KirkHart, Jessica Rothschuh & Jenny Kattlove, *Information Technology Making a Difference in Children's Lives*, The Children's Partnership, at 4 (Apr. 2008), available at <http://www.childrenspartnership.org/AM/Template.cfm?Section=Reports1&Template=/CM/ContentDisplay.cfm&ContentID=11860>.



Internet access, and one-sixth as likely to have broadband access.<sup>13</sup> Thus, initiatives attempting to mitigate such disparities across race, ethnicity, and income present viable opportunities to bridge the digital divide. Therefore, driving broadband penetration among school-age children is an important step toward achieving universal broadband.

**b. Students Without Internet Access are Increasingly Left Behind in the Digital World**

Technology has transformed how students today learn and receive instruction. More than ever, school-age students need to use the Internet to complete homework assignments. In fact, 65% of teenagers use the Internet to complete homework assignments.<sup>14</sup> And students themselves recognize the importance of Internet access to education, as 70% of school-age children assert that the Internet helps them earn better grades.<sup>15</sup>

Yet as technology becomes more prevalent in modern education, students without home Internet access are further disadvantaged. For example, the *National Broadband Plan* explained the importance of home broadband access to student achievement:

Online educational systems are rapidly taking learning outside the classroom, creating a potential situation where students with access to broadband at home will have an even greater advantage over those students who can only access these resources at their public schools and libraries.<sup>16</sup>

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<sup>13</sup> *Id.*

<sup>14</sup> *Cable Industry Flouts Broadband Plan for Students*, eSchool News, Dec. 3, 2009, available at <http://www.eschoolnews.com/2009/12/03/cable-industry-floats-broadband-plan-for-students/>.

<sup>15</sup> *Survey: Web makes kids better students*, eSchool News, Oct. 1, 2004, available at <http://www.eschoolnews.com/news/top-news/index.cfm?i=35988&CFID=4168215&CFTOKEN=41334092#>.

<sup>16</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 254.



More concretely, research shows that school-age children without home Internet access score lower on standardized tests, earn lower GPAs, and are less likely to graduate high school.<sup>17</sup> Bridging the digital divide is therefore critical to ensuring that students possess the tools they need to utilize the education they receive in school.

Home Internet access provides additional educational benefits that do not accrue to students without such access. For instance, home Internet access permits students to capitalize on individualized learning programs, whether to redress deficiencies in a particular academic area, or to allow a high-achieving student to advance to more challenging topics than presented in school. For example, home Internet access enables a student attending a rural school that does not offer Advanced Placement (AP) courses to receive online instruction in selected AP courses. One such program, Florida Virtual School, helped its students earn higher AP scores and score more than fifteen percentage points higher than the average score on the state's standardized tests in sixth through tenth grades.<sup>18</sup> Additionally, some school districts have successfully used online systems to reach at-risk students and target high dropout rates.<sup>19</sup>

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<sup>17</sup> Freenet Kids Proposal, *A Revenue Neutral Economic Development Initiative to Provide Free Broadband Internet for Every Child*, Lawrence Freenet, Inc., at 5 (Jan. 23, 2008), available at [http://www.lawrenceks.org/web\\_based\\_agendas/2008/01-29-08/01-29-08h/lawrence\\_freenet\\_kids\\_proposal.pdf](http://www.lawrenceks.org/web_based_agendas/2008/01-29-08/01-29-08h/lawrence_freenet_kids_proposal.pdf).

<sup>18</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 245 (citing Florida TaxWatch Center for Educational Performance & Accountability, *Final Report: A Comprehensive Assessment of Florida Virtual School*, at 17 (2007), available at <http://www.floridataxwatch.org/resources/pdf/110507FinalReportFLVS.pdf>).

<sup>19</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 246 (citing John Watson & Butch Gemin, *Promising Practices in Online Learning: Using Online Learning for At-Risk Students and Credit Recovery*, North American Council for Online Learning, at 8-9 (June 2008), available at [http://www.inacol.org/research/promisingpractices/NACOL\\_CreditRecovery\\_PromisingPractices.pdf](http://www.inacol.org/research/promisingpractices/NACOL_CreditRecovery_PromisingPractices.pdf)).



Students with home Internet access can also email or instant message their teachers to get feedback on individualized learning programs or to get help with a difficult concept.<sup>20</sup> And the Internet enables parents to actively participate in their children's education. For example, a parent may review assignments posted on Internet websites like Blackboard, assist his child with scheduling, provide tutoring, or communicate with his student's teachers. Therefore, students who do not have home Internet access not only face the prospect of lower educational achievement, but also have fewer opportunities to receive the services and support they need to stay motivated in school.

**c. Both Broadband Deployment and Broadband Adoption are Critical to Bridging the Digital Divide**

Achieving universal broadband service requires stimulating both the supply of broadband—or broadband deployment—as well as the demand for broadband—or broadband adoption. Congress astutely recognized the importance of targeting both deployment and adoption when it enacted the Broadband Data Improvement Act of 2008 (BDIA). In its findings, Congress noted,

The deployment and adoption of broadband technology has resulted in enhanced economic development and public safety for communities across the Nation, improved health care, and educational opportunities, and a better quality of life for all Americans . . . . Continued progress in the deployment and adoption of broadband technology is vital to ensuring that our Nation remains competitive and continues to create business and job growth.<sup>21</sup>

Improving both broadband deployment and broadband adoption is therefore critical to bridging the digital divide.

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<sup>20</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 245.

<sup>21</sup> The Broadband Data Improvement Act of 2008, Pub. L. No. 110-385, 122 Stat. 4096 (2008).



Nonprofit programs have achieved positive results from implementing programs addressing both broadband deployment and broadband adoption. Connected Nation, for example, runs two programs—“No Child Left Offline” (in Kentucky and Ohio) and “Computers 4 Kids” (in Tennessee)—that provide Internet-ready computers to disadvantaged families as a means to improve home broadband penetration among school-age children.<sup>22</sup> In Kentucky, Internet adoption among low-income families grew more than ten times faster in counties that participated in No Child Left Offline than in non-participating counties.<sup>23</sup>

Connected Nation also initiated a broadband stimulus program entitled, “Every Citizen Online,” targeting low-income families.<sup>24</sup> Every Citizen Online—which Intel partners in and developed—is a public-private partnership aiming to provide discounts to enable low-income families to purchase PCs and broadband subscriptions.<sup>25</sup> While these efforts have shown promise, a uniform program striving to improve broadband penetration among school-age children nationwide will likely achieve greater progress toward universal broadband. In sum, the digital divide poses an even greater obstacle to academic achievement of low-income

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<sup>22</sup> For information on Kentucky and Tennessee, go to [http://connectednation.org/community\\_programs/](http://connectednation.org/community_programs/). For information on Ohio, go to <http://www.connectohio.org/nclo/>.

<sup>23</sup> Connected Nation, Inc., *The Economic Impact of Stimulating Broadband Demand Nationally*, at 14 (Feb. 21, 2008), available at [http://connectednation.org/documents/Connected\\_Nation\\_EIS\\_Study\\_Full\\_Report\\_02212008.pdf](http://connectednation.org/documents/Connected_Nation_EIS_Study_Full_Report_02212008.pdf).

<sup>24</sup> To find out more about Every Citizen Online, see [http://connectednation.org/community\\_programs/Every\\_Citizen\\_Online\\_FAQ.php](http://connectednation.org/community_programs/Every_Citizen_Online_FAQ.php).

<sup>25</sup> Posting of Margie Dickman to Policy@Intel Blog, *U.S. Stimulus: Intel Invests in Sustainable Broadband Adoption*, Aug. 20, 2009, [http://blogs.intel.com/policy/2009/08/us\\_stimulus\\_intel\\_invests\\_in\\_sustainable\\_broadband\\_adoption.php](http://blogs.intel.com/policy/2009/08/us_stimulus_intel_invests_in_sustainable_broadband_adoption.php).



students in our digital world, but programs addressing both broadband deployment and broadband adoption have been shown to help bridge this divide.

### **III. THE FCC SHOULD IMPLEMENT A THREE-YEAR PILOT PROGRAM TO PROVIDE HOME BROADBAND INTERNET ACCESS TO LOW-INCOME STUDENTS WHO QUALIFY FOR LIFELINE SERVICES**

Intel believes that improving broadband penetration among school-age children is critical to bridging the digital divide and equipping tomorrow's innovators with the education needed to succeed in a digital world. As discussed previously, Internet access is an integral part of the classroom and home learning experience, and research indicates that students who cannot access the Internet at home have lower educational achievement than their peers. As teachers across the country increasingly incorporate technology into their classrooms and curriculums, students without home Internet access will be left further and further behind. Intel therefore supports the FCC's goal to close the educational achievement gap created by the digital divide. However, we believe that maintaining the availability of E-Rate services to low-income schools and libraries is a necessary step toward improving domestic broadband penetration. We therefore submit our recommendations for consideration.

Intel commends the FCC for its proposal to extend E-Rate funding to provide broadband access for student use off campus. However, we believe that the FCC should avoid allocating money from the E-Rate program to fund home broadband Internet access for low-income students, as drawing funds from the E-Rate program would likely be unsustainable given that the E-Rate program is already oversubscribed for the eligible services it currently supports.<sup>26</sup>

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<sup>26</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 255 (In 2007, only schools or libraries at an E-Rate discount level of at least 81% received Priority 2 funding).



We also believe that a research-based approach to providing home broadband Internet subscriptions to low-income students will allow the FCC to monitor and adjust this initiative to most effectively improve broadband penetration. We therefore recommend that the FCC allocate Lifeline funds to implement a three-year pilot program subsidizing home broadband Internet subscriptions for sixth through eighth grade students whose households qualify for Lifeline telephone services. Intel believes that this proposal presents great hope toward bridging the digital divide, while preserving the services the E-Rate program promises to schools and libraries.

**a. The FCC Should Fund Home Broadband Access by Providing Reimbursed Broadband Subscriptions to Students Who Qualify for Lifeline**

Intel recommends that the FCC reimburse the price of home broadband subscriptions to low-income students qualifying for Lifeline telephone services.<sup>27</sup> The *National Broadband Plan* proposed a similar recommendation by suggesting,

The Federal Communications Commission (FCC) should expand Lifeline Assistance (Lifeline) and Link-Up America (Link-Up) to make broadband more affordable for low-income households.<sup>28</sup>

As previously discussed, affordability is a major factor explaining the low rate of broadband adoption among low-income individuals. If the FCC provides subsidized broadband services to low-income students, the FCC will address a key obstacle to universal broadband. Consistent with the FCC's own suggestion in the *National Broadband Plan*, Intel therefore suggests that the FCC adopt this proposal to subsidize broadband subscriptions for low-income students.

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<sup>27</sup> 47 C.F.R. §§ 54.400—54.418.

<sup>28</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 172.



Under Lifeline, low-income households or individuals receive discounts on telephone service for a single telephone line in their principal residence.<sup>29</sup> In keeping with the current Lifeline program, we propose that the FCC provide students who qualify as “low-income consumers” under the Lifeline program, with reimbursed broadband subscriptions.<sup>30</sup> The FCC could determine eligibility for broadband reimbursement by adopting the framework already established for Lifeline telephone services. Students could thereby qualify for reimbursed broadband subscriptions in one of three general ways:

1. Students residing in states that mandate state Lifeline support must satisfy state requirements for Lifeline support.<sup>31</sup>
2. Students residing in states that do not mandate state Lifeline support qualify if their household income falls at or below 135% of Federal Poverty Guidelines, or their household participates in one of the following federal assistance programs:  
  
Medicaid; Food Stamps; Supplemental Security Income; Federal Public Housing Assistance (Section 8); Low-Income Home Energy Assistance Program; National School Lunch Program’s free lunch program; or Temporary Assistance for Needy Families.<sup>32</sup>
3. Students living on or near reservations qualify for Lifeline assistance if they satisfy any of the previous requirements, or if they or their households participate in one of the following federal assistance programs: Bureau of Indian Affairs general

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<sup>29</sup> *Federal-State Joint Board on Universal Service, Lifeline and Link Up*, CC Docket No. 96-45, WC Docket No. 03-109, Referral Order, FCC 10-72, at 6 (rel. May 4, 2010).

<sup>30</sup> 47 C.F.R. § 54.400(a).

<sup>31</sup> *Id.* § 54.409(a).

<sup>32</sup> *Id.* § 54.409(b).



assistance; tribally-administered Temporary Assistance for Needy Families; Head Start (only those meeting its income-qualifying standard); or National School Lunch Program's free lunch program.<sup>33</sup>

If the FCC provides broadband access to students from low-income households qualifying for Lifeline support, the Commission will benefit from a streamlined application and review process for providing services to low-income consumers. Additionally, determining a student's eligibility using the criteria from Lifeline ensures that the FCC targets those students most in need of subsidized broadband. Therefore, the FCC should reimburse the broadband subscriptions of low-income students who qualify for Lifeline telephone services.

Intel believes that the FCC should reimburse broadband subscriptions on a per-residence basis, rather than per-student, thereby extending broadband access to both students and their families. We believe that providing home broadband access to a student and his family will achieve greater progress toward universal broadband than will restricting access to the student alone. We further believe that extending broadband access to a student's residence permits greater flexibility for learning than extending access merely to portable learning devices. Intel thereby supports the proposal in H.R. 4619 ("E-Rate 2.0 Act of 2010"), to provide one home Internet access voucher per student residence.<sup>34</sup> However, we diverge from the proposal in H.R. 4619 to extend broadband service solely to students who already possess a home computer,<sup>35</sup> as we believe that subsidizing broadband subscriptions incentivizes device purchases. Driving computer ownership is a critical step toward improving broadband

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<sup>33</sup> *Id.* § 54.409(c).

<sup>34</sup> E-Rate 2.0 Act of 2010, H.R. 4619, 111th Cong. § 2 (2010) (introduced by Rep. Markey, Edward J. [MA-7]).

<sup>35</sup> *Id.*



penetration and ultimately attaining universal broadband. Thus, the FCC should subsidize home broadband subscriptions for low-income students, regardless of whether the student already owns a computer.

By providing the entire household with broadband access on a single subscription, reimbursement on a per-residence basis is not only cost-effective, but also promotes greater broadband penetration. If we use the number of households subscribing to Lifeline in 2007 as a proxy for the potential number of households with students qualifying for reimbursed broadband access under Lifeline, then a long-term program may improve broadband penetration by as many as 6.95 million U.S. households.<sup>36</sup> Extending broadband access on a per-residence basis, rather than per-student, will therefore likely promote greater improvements in broadband penetration by making broadband accessible to every member of the household.

Providing broadband access under Lifeline also avoids increasing the burden on the already oversubscribed E-Rate program. Currently, the E-Rate funding cap is too low to satisfy the Priority 2 demands of the majority of schools and libraries, as in 2007 only those schools or libraries at a discount level of 81% or higher received Priority 2 funding.<sup>37</sup> And it is highly likely that, before long, even the lowest income schools and libraries – those eligible for 90%

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<sup>36</sup> *Universal Service Monitoring Report*, CC Docket No. 98-202, at 2-7 (June 2008), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-287688A4.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-287688A4.pdf), p. 2-7. Of the 6,947,355 U.S. households subscribing to Lifeline in 2007, 329,386 were tribal households, with the remaining 6,617,969 households designated as non-tribal. The number of qualifying households would likely be less than 6.95 million given that Lifeline subscription rates have been declining since 2005, many households likely do not contain school-age children, and some of these households may already have broadband access.

<sup>37</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 255.



discounts – will face rationing for Priority 2 services as Priority 1 funds grow steadily. The FCC should thus consider reimbursing student home broadband access from Lifeline funds to prevent further strain on E-Rate.

Locating an alternative source of funding to provide subsidized broadband to low-income students also permits greater progress toward universal broadband than likely possible under E-Rate. Specifically, if the FCC preserves the availability of E-Rate services for schools and libraries while providing subsidized broadband subscriptions to low-income students, the FCC will concurrently improve broadband penetration among schools, libraries, and households. Therefore, the FCC should provide broadband subscription reimbursements to school-age children qualifying for support under Lifeline, on a per-residence basis.

**b. The FCC Should Implement a Three-Year Pilot Program of Sixth Through Eighth Grade Students in Households Qualifying for Lifeline**

Intel recommends that the FCC implement a three-year pilot program providing reimbursed home broadband Internet subscriptions to sixth through eighth grade students in Lifeline-qualifying households. The FCC should consider limiting the pilot program to middle school students, as a quasi-experimental study of sixth through eighth grade students in the Texas Technology Immersion Pilot (Texas TIP) highlighted the significance of technology immersion on student achievement among these students.<sup>38</sup> Among other findings, the study found that technology immersion had a statistically significant effect on the Texas Assessment

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<sup>38</sup> Kelly Shapley et al., *Evaluation of the Texas Technology Immersion Pilot: Final Outcomes for a Four-Year Study (2004-05 to 2007-08)*, Texas Center for Educational Research, Jan. 2009, at I (Texas TIP instituted “technology immersion,” by providing wireless mobile computing devices for each teacher and student at sampled schools, software, online content supporting the state curriculum in targeted subjects, online assessments, professional development, and technical support.).



of Knowledge and Skills (TAKS) mathematics achievement of seventh and eighth grade students.<sup>39</sup> The FCC may therefore benefit from taking a research-based approach to restrict the pilot program to sixth through eighth grade low-income students.

To approximate the total potential population size of the pilot program, we can use the number of students served by the Title I program. Title I extends “financial assistance to LEAs [Local Education Authorities] and schools with high numbers or high percentages of poor children to help ensure that all children meet challenging state academic standards.”<sup>40</sup> For the 2006-2007 school year, Title I served approximately 3.6 million sixth through eighth grade students.<sup>41</sup> Granted, providing home broadband subscriptions all-at-once to 3.6 million students may be cost-prohibitive and difficult to implement in practice. Consequently, to reduce costs and provide meaningful analytical data on the program, the FCC should design a pilot program analyzing the merits of broadband access among a cross-section of these students. After the three-year period measured in the pilot, the FCC should consider whether the merits of the program warrant greater funding to extend the initiatives beyond the sample population.

Implementing a three-year pilot program will allow the FCC to analyze longitudinal data to fully examine the effects of providing home broadband to low-income students. In order to accumulate meaningful data, the FCC should construct a research design that includes a wide-range of variables, different sampling techniques, and goals. This design should be flexible

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<sup>39</sup> *Id.* at vi.

<sup>40</sup> U.S. Department of Education, *Improving Basic Programs Operated by Local Education Agencies (Title I, Part A)*, <http://www2.ed.gov/programs/titleiparta/index.html>.

<sup>41</sup> See *Fast Facts*, National Center for Educational Statistics, <http://nces.ed.gov/fastfacts/display.asp?id=158>.



enough to allow the FCC to adjust the program to best improve broadband penetration among low-income students. The research design should also provide measures of success to enable the FCC to fully evaluate whether to continue, modify, or terminate the initiatives in the pilot program at the end of the three years. General factors that the FCC should consider include: (1) increased broadband adoption and penetration; (2) improvements in the way children learn; (3) cost-effectiveness; and (4) feasibility. The FCC should also examine any factors it deems relevant to capturing the success of the pilot program. In sum, the FCC should use funds from Lifeline to implement a three-year pilot program that provides reimbursed home broadband subscriptions to Lifeline-qualifying sixth through eighth grade students.

#### **IV. CONCLUSION**

For the foregoing reasons, Intel respectfully requests that the FCC implement a three-year pilot program reimbursing home broadband subscriptions for sixth through eighth grade students who qualify for Lifeline telephone services. The FCC should allocate funding for this pilot from the Lifeline program. We believe that our recommendations present great potential to bridge the digital divide and to achieve universal broadband. Intel therefore asks the FCC to consider our proposals to ensure that students receive the education they need to succeed in our digital world.



Respectfully Submitted,

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